Nutrition News

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STARVATION STUDIES REVEAL PHYSICAL AND MENTAL CHANGES

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In the enlarged knowledge of modern nutrition we may view with concern the dietary practices of even the most favored nations, but the arguments about "sub-clinical deficiency" and "optimal" nutrition become academic in the face of the brutal facts of real starvation. Even in peacetime, starvation is chronic and endemic in many parts of the world; in the recent war years and the present aftermath the victims of famine are innumerable.

The problems of starvation impose many direct demands on nutritional knowledge. The applicable scientific data are few as yet. The effects of famine conditions are very different from total fasting, and animal experiments provide very little useful quantitative information. There have been almost no controlled studies of nutritional rehabilitation after prolonged starvation.

The general nature of the problems is apparent when we ask some of the simplest but most urgent questions. At given levels of semi-starvation, what is the speed and extent of deterioration in physiological and psychological functions? How are these basic functional changes related to work capacity and performance in ordinary occupations? What are the effects of starvation on resistance to disease and injury? How can relative degrees of starvation be evaluated in individuals? What is the speed and character of the rehabilitation with optimal relief feeding? How can we appraise the efficacy of relief feeding? What diets are most efficient after starvation? Are vitamin pills necessary? How much protein, and of what quality, should be provided? What are the long-time residues of starvation?

In most cases the practical question cannot be answered properly in the absence of fundamental data. In the Laboratory of Physiological Hygiene at the University of Minnesota an attempt is being made to discover the major outlines of some of the more obvious points.

A large number of volunteers from Civilian Public Service are undergoing controlled starvation and nutritional rehabilitation. Elaborate measurements of some hundreds of characteristics only partly covers the more important functions, and the food items and diets under consideration are few. So far laboratory and field results agree.

2000 Calories Per Day Inadequate

Starving peoples become almost totally preoccupied with thoughts — and dreams — of food but these have to do more with quantity than with quality or variety. Monotony is not a problem. The hunger sensation never diminishes. The dietary intake to gratify hunger and to produce reasonably rapid rehabilitation must be very large. It is nonsense to talk of "rehabilitation" with relief feeding of the order of 2000 calories per day.

The various functions of the body are affected to unequal degrees by simple starvation. Vision, hearing, and the basic capacity for intellective function are little affected. Strength for a single exertion declines but not so much as coordination and endurance. Moderate anemia is progressive, but

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the blood volume changes little. Clinical edema may come and go, but the relative proportion of fluid in the body steadily rises. Apathy and depression settle on the victim with an inescapable grip in spite of a rising irritability.

The starving man exhibits a series of protective adaptations which have much theoretical and practical interest. For example, the body temperature falls and the basal metabolism and heart rate decline to extraordinarily low levels. These changes are not immediately reversed by rehabilitation feeding. It should be noted that starvation is not limited to war famine conditions. These problems recur among the underprivileged everywhere.

Experience with both practical and scientific aspects of starvation leads to the conclusion that starvation is one of the most informative situations in which human physiology and psychology may be studied.

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Glances AT NUTRITION RESEARCH

Among the great nutrition problems of today are those involving rehabilitation and convalescence. Existing scientific knowledge cannot adequately cope with war-imposed needs. The following abstracts reflect these needs and current efforts to combat them.

Treatment of Starvation: Long periods of fasting result in a progressive lowering of the absorptive and protective functions of the intestinal tract. The cells of the lining become disorganized, resulting ultimately in irritation and diarrhea. This extensive impairment is due, in part, to the fact that amino acids needed for repair are utilized for energy. To prevent this "perversion," it is necessary to feed glucose and the B-vitamins needed for its use.

The patient retaining his powers of digestion and absorption may be fed suitable protein sources, such as reconstituted skim milk powder, either by mouth or by nasal tube feeding—depending on his ability to swallow. If his digestion is markedly impaired, protein hydrolysates may be given. In some extreme starvation cases where the milk diet could not be taken easily, intravenous glucose-saline feedings, supplemented with liver extract, gave remarkable results.

—J. Am. Med. Assn. Vol. 128:822 (July) 1945.

Vitamins in Convalescence: Examination for signs of deficiency should be made on all convalescents. The nutrition history should include all factors which might interfere with intestinal synthesis or absorption of vitamins or influence body needs. Although intestinal disorders interfere with the absorption of fat-soluble vitamins, "for the great majority of convalescents, it appears that a good diet with plenty of butterfat and yellow vegetables will provide ample vitamin A." Vitamin A is preferable to carotene, especially in disease. Large doses of fat-soluble vitamin D are indicated in osteomalacia.

"The requirements for the water-soluble vitamins are complicated by the contribution of bacterial synthesis in the intestine." Where sulfa drugs are used, an increase in B-vitamin intake is desirable. Extra vitamin C should be given whenever bland diets are fed.

In ulcerative colitis, sprue, or amebic and chronic bacillary dysentery, it is advisable to supply additional vitamin K. The convalescence of surgical patients with diseases of the liver or gall bladder, may be facilitated by the administration of vitamin K.

—Fed. Proc. Vol. 3:207 (Sept.) 1944.

Famine Edema: A complete study was made on 48 malnourished adults in a Belgian hospital; all were edematous. Bed rest resulted in the disappearance of the edema within 10 to 15 days, but to sustain this improvement a better diet was necessary.

The circulatory disturbances were similar to those observed in cardiac or renal edema. The osmotic pressure of the blood serum was only 50 per cent of normal. Serum protein levels ranged from 3.6 to 8.6 per cent—only five subjects showing values within the normal limits of 7 to 9 per cent. Pulse rates were low, being less than 55 per minute in two thirds of the cases with the lowest recorded at 38 per minute. Heart output was less than normal, and circulation time was increased by 50 to 150 per cent. The basal metabolic rate was subnormal in three fourths of the patients and, in nearly one half of the cases, was decreased by as much as 30 per cent.

—Nutr. Absts. & Rev. Vol. 15:149 (July) 1945.

TIMELY TOPICS

Dr. Ancel Keys

Dr. Ancel Keys, author of the leading article of this issue, is professor of physiology and director of the Laboratory of Physiological Hygiene at the University of Minnesota. He has also served as special consultant on Foods to the Secretary of War, and is a member of the Committee on Food Composition of the National Research Council. He has done extensive testing of Army rations and is carrying on experiments relative to setting up standards for rehabilitation diets.

Director-General FAO

Sir John Boyd Orr, director of Rowett Research Institute, Aberdeen and of the Imperial Bureau of Animal Nutrition, is Director-General of the Food and Agriculture Organization of the United Nations. Thirty-eight of the United Nations have pledged their support to the constitution of this international organization.

Army Nutrition Teams

Army medical-nutrition teams are surveying the countries in Europe occupied by U. S. Troops to ascertain the nutritional status of the people. These teams are made up of a nutrition officer, a laboratory technician, and a medical nutritionist. To obtain a cross-section of the populations the following types of people were examined: workers, normal consumers, children in various age groups, pregnant and nursing women. Methods used for assembling information were drawn up by the nutrition experts in the Army.

ATTEMPTS TO RELIEVE STARVATION IN GREECE

By Miss Frances B. Floore, Nutritionist with UNRRA and Greek War Relief

(Abstract from a personal letter)

Greece is as lovely as I expected it to be and as devastated. Only a race of people with a philosophy of a Socrates or a Plato could have withstood what they have for four long years and still come up smiling. All of the stories you have heard are true, and more could be added.

There are three thousand burned villages with few young boys or men—as they were killed for reprisal at the time the villages were burned. Some of the villagers are not only without adequate lodging, but also without enough food and clothing. They represent as much inflammable human material—a prey to tuberculosis, malnutrition, and general disintegration.

The story is simple but sordid. Behind it lies the background of appalling economic plight—of people striving against seemingly overwhelming odds to eke out a living from parched fields and burned crops.

The Germans took Greek equipment, their cattle and their food, during the days of occupation. Thus from morning to night the Greeks are forced to plow their fields with defective and often improvised instruments, trying in prodigious fashion to extract from an inhospitable soil the little it has to offer. How they can stand another winter of cold, hunger, and neglect, I do not know. Unless we act quickly, that will be their life. Shoes are needed more than anything and then warm garments and nourishing food.

My work is fascinating, as I am working on the child feeding program, whereby the Greek War Relief Association and other relief organizations plan to feed one million needy children. I've been planning menus, simple ones, as the allotment of available supplies for winter is much below what we'd hoped for.

However, that one warm meal may be the gap between starvation and life. A lot has been done, but it's been concentrated on the cities and places easy of access. The outlying districts where guerrilla warfare was carried on were closed to the Joint Relief Committee and, of course, it is in such villages and provinces that the need is greatest. Many of them will be inaccessible in a few months and it will be necessary to send four months' supply of food to hold over until spring.

Last week end we took a long field trip up into the mountains, with scenery of unsurpassed beauty and peasant homes lining the roadside similar to those the movies love to portray, only I never realized they were real. The Greeks have an innate sense of beauty and charm and the simplest peasant home is attractive and lovely in a primitive way.

You will be interested in one canteen we saw and it was worth the whole trip, over mine-blown roads and hairpin curves, riding in a truck that shook our insides and scared the daylights out of us. The canteen was in a narrow gap in the mountains, out-of-doors, uncovered, and consisted of a half of a cod liver oil barrel which served as the soup kettle, with a fire under it—and that was all! We would have missed it entirely, but the people saw us going past and hailed us as we came back, with a plate of honey on which were five spoons and little cordial glasses of 1933 cognac. It was the only place that offered us food and they were so happy and enthusiastic, we couldn't refuse. When I spotted the primitive "soup kitchen" I was out of the truck and all over the place taking pictures, though the faces of the children haunt me by night.

Our food, well, the less said the better. In desperation, I volunteered to spend a few hours a day in the kitchen. The British half-army field rations that we live on were meant to be supplemented with fresh food, and I am looking forward to some lobster, fish, and the luscious fruits that Greece is noted for.

We have a lovely large dining room, with a priceless chandelier, and silver platters, teapots, and creamers. But there are not enough cups to go around, no napkins and too few glasses.

Such is life with UNRRA in Greece. The work is intense but extremely satisfying.

NUTRITION NEED NOT BE GRIM

By Florence La Ganke Harris, Home Economics Consultant, Cleveland, Ohio

Any successful nutrition educator has learned that nutrition teaching succeeds best when it is serious but not grim. Quite a distinction exists between those two words. For example, a wedding "for better for worse" is a serious affair but the ceremony and the succeeding celebration is anything but grim.

When analyses of draft rejections show dietary faults are root causes, a nutritionist may be excused for wishing that correct food selection could be made compulsory, but she knows better than to attack the problem in that spirit. The result would be rather grim, as we all know. Her problem is complex. How can a nutrition educator influence individuals to make them want to eat the right and necessary foods?

At this point she may recall the piper who might well have been called "one-tune Tom, for," says the poet, "the only tune that he could play was 'Over the hills and far away!'" He attracted listeners but they did not become his followers because they were bored by hearing the same thing over and over again. Available to the piper and to the composers of the most stirring symphonies are fundamental scales and notes. Compare, though, the solitary tune of the piper with the symphony written by a composer with versatility, imagination, and variety of approach.

A nutritionist, worthy of the name, has a sound, basic foundation; she knows the chemistry of nutrition; she keeps abreast of the changing frontiers of nutritional research findings. But to acquire more than transient listeners she must be versatile in her interpretations, never forgetting that no two people react to the same fact in the same way. She must be so much

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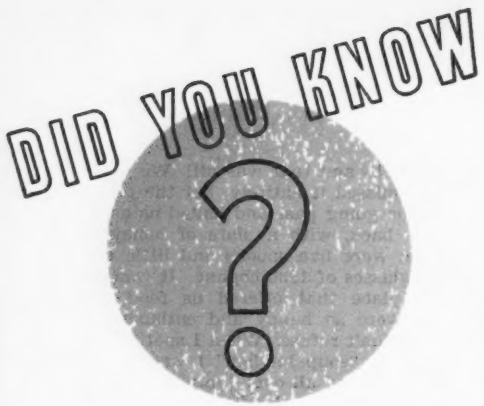

—that quick frozen fresh milk makes a ready supply of milk available to wounded soldiers returning on Army hospital ships?

—that the American public was consuming eggs at the rate of about 400 per person a year?

—that penicillin is being given in ice cream to check respiratory infection?

—that food habits of college freshmen tend to improve during their first year at college?

—that paint brush bristles are being made from milk casein?

—that dill is a native of the Mediterranean countries and southern Russia?

—that a portable machine producing 2½ gallons of ice cream from a dehydrated mix every ten minutes has been invented for use in the tropics?

—that removing tops of carrots keeps the moisture in the carrot roots?

—that a starving person will assimilate glucose in solution and protein hydrolysate, but might not assimilate food?

THINGS YOU'LL LIKE TO READ

THE PSYCHOLOGY OF DIET AND NUTRITION—L. S. Selling, M. D. and Mary A. Ferraro, M. S. W. W. Norton & Co. 1945. $2.75.

Teachers, dietitians, school lunch managers, homemakers have long pondered the psychological approach to problems involved in eating habits. The authors attack the problem in relation to child feeding, food habits of the family, food fads, customs, and aversions, the special psychology of diet in disease, and other subjects of interest.

WHAT TO DO ABOUT VITAMINS—Roger J. Williams. University of Oklahoma Press. 1945. $1.00.

A practical presentation of the role of vitamins and minerals in the diet is made in this book. Our need for vitamins, and methods of obtaining them are outlined. The book is written for the layman and will be of interest to home economics and health teachers.

HIDDEN HUNGER—Icie G. Macy and H. H. Williams. The Jacques Cattell Press. 1945. $3.00.

This book relates nutrition to history, progress of civilization, and allied scientific fields. A wide variety of food problems are touched—from infant feeding to the dietary problems of feeding an army. The role nutrition will play in establishing a lasting peace is also discussed. This is a good general nutrition book for the teacher, public health worker, and the dietitian.

FOOD FOR THE WORLD—Theodore Schultz. University of Chicago Press. 1945. $3.75.

Twenty-two experts in nutrition, agriculture, and economics discuss the problem of feeding the peoples of the world. The need for adequate distribution of food to aleviate starvation is also pointed out.

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at home with her knowledge and her audience that she can use the basic notes to form many tunes — some somber, some gay, some sprightly— but running through all of them will be her basic theme—adequate diet.

Sometimes it's an alliteration that does the trick: as witness one man who said, "I never would eat salads until a nutrition speaker used the phrase, 'vim, vigor, vitality, and vitamins.' That impressed me."

Sometimes it's a play on the sound of words. Middle-aged women are the ones who respond most appreciatively to the statement, "Fats and carbohydrates are excellent producers of vim, which is a synonym for energy or verve; but" — and here's where the women get the point—"too many fats and carbohydrates change 'verve' to 'curve.'"

Surely it must have been a grim and dictatorish sort of teacher who brought forth this story from one of the class. Said the student, "I had been taking the nutrition course and translating what I learned into food set before my family. Imagine my feelings when my nine-year old daughter asked for a birthday party but pleaded, 'Please, mother, can the food be good instead of nutritious?'"

Years and years ago the Child Health Organization used Cho-Cho, the health clown. Children chortled and grown-ups chuckled, much as they do now at the Disney film: "Something You Didn't Eat." But the important nutrition truths stick.

Nutrition-minded managers of industrial cafeterias found that attractive plate combinations and perky salads became more popular than meat, potatoes, and gravy when table tents carried nutrition truths couched in popular language and tied up with the current interests of the workers. The messages on the table tents were serious, but far from grim even though every fact was scientifically correct.

Increasing the good nutrition of the peoples of our nation is a serious business, but if buoyant health is the desired end-result it would seem poor psychology to think it can be affected by a grim approach. That's why most nutrition educators seek and use a lighter, sprightlier approach.